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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/082,769	02/25/2002	George G. Barclay	51065	4396
21874	7590	10/04/2006	EXAMINER	
EDWARDS & ANGELL, LLP			WALKE, AMANDA C	
P.O. BOX 55874			ART UNIT	
BOSTON, MA 02205			PAPER NUMBER	

1752

DATE MAILED: 10/04/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/082,769

Applicant(s)

BARCLAY ET AL.

Examiner

Amanda C. Walke

Art Unit

1752

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 13 June 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 37-40,45-47 and 49-53 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 37-40,45-47 and 49-53 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

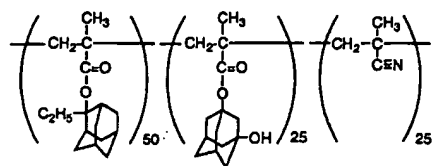
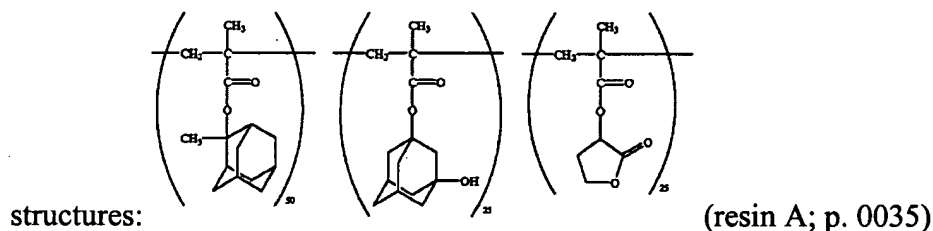
**DETAILED ACTION*****Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 37-40, 45-47, and 49-53 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fujishima et al. (EP 982628 A2) with Rahman (US 6610465 B2) cited to show inherent in view of Willson et al. (US 6103445 A).

Fujishima exemplifies the synthesis of resin A and resin H that have the following



(resin H; p. 0043). See also resins C, D, I and J. Example 7

forms a photoresist composition comprising resin H; p-tolyldiphenylsulfonium trifluoromethanesulfonate as an acid generator; 2,6-diisopropylaniline as a quencher; and 2-heptanone as the solvent. The said composition was applied to a silicon wafer; exposed using a KrF excimer stepper; and developed to form a pattern (p. 0047-0049). Example 11 forms a photoresist composition comprising resin A; p-tolyldiphenylsulfonium perfluorooctane sulfonate

Art Unit: 1752

as an acid generator; 2,6-diisopropylaniline as a quencher; and propylene glycol monomethyl ether acetate and  $\gamma$ -butyrolactone as the solvent mixture. The said composition was applied to a silicon wafer; exposed using an ArF excimer stepper; and developed to form a pattern (p. 0052-0054). See also example 3.

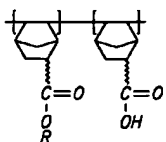
It is the examiner's position that the second monomer in each of resins A and H meets the limitation of a hydroxyadamantyl moiety. The third monomer of resin A meets the limitations of a lactone which is readily acid labile. The hydroxyadamantyl methacrylate is also readily acid labile. This position is supported by the teachings of Rahman which discloses that 3-hydroxy-1-methacryloyloxyadamantane,  $\beta$ -methacryloyloxy- $\gamma$ -butyrolactone and  $\alpha$ -methacryloyloxy- $\gamma$ -butyrolactone are examples of acid labile (meth)acrylates (c. 6, l. 56-63). The third monomer of resin H meets the limitation of a nitrile moiety as set forth in instant claim 40. The first monomer of each of the resins A and H meet the limitation of an alicyclic acid labile ester group as set forth in instant claims 39. Furthermore the examiner is of the position that a silicon wafer meets the limitation of a microelectronic wafer substrate as set forth in instant claim 46.

Although, Fujishima fails to exemplify a polymer comprising a polymer that is a tetrapolymer it clearly teaches that taught resin (1) having recurring units of formula (I), (II) and (III) may also have polymerization units of formula (IV)  $\alpha$ -methacryloyloxy- $\gamma$ -butyrolactone or formula (V) maleic anhydride (p. 0008-0011 and 0014-0024). One of ordinary skill in the art would readily envisage a tetrapolymer comprising recurring unit of formula (I), (II), (III) such as that exemplified in resin H and a recurring unit of formula (IV) or formula (V) as disclosed in paragraphs 0008-0011.

Art Unit: 1752

Fujishima, as discussed above, teaches all the limitations of the instant claims except the presence of a polymerized norbornene group, however does suggest in p. 0022 that a norbornene-type unit may be included.

Willson (US '445) teaches that the cycloaliphatic backbone of polymers having the



generic formula:

(Fig. 1) serves to provide dry etch-resistance and thermal stability

and also serves to tether the pendant functionalities required for imaging. The said system also has high sensitivity. The said polymer introduces a pendant acid cleavable group, which enhances adhesion and solubility of the material in aqueous base developing solvent (c. 15, l. 1-28). It is the examiner's position that the said generic formula meets the limitation of a polymerized norbornene group as set forth in the instant claims. One of ordinary skill in the art would have been motivated by the teachings of Willson to incorporate cycloaliphatic backbones having the said generic formula into the exemplified resins A or H of Fujishima in order to improve dry etch-resistance, thermal stability as well as sensitivity, adhesion and solubility of the formed material.

### ***Response to Arguments***

3. Applicant's arguments filed 6/13/2006 have been fully considered but they are not persuasive. Applicants argue that there is no motivation in the Fujishima (EP 982628 A2) reference to employ 4 recurring units to have a tetrapolymer or to include a norbornene groups. As discussed above, although, Fujishima fails to exemplify a polymer comprising a polymer that is a tetrapolymer it clearly teaches that taught resin (1) having recurring units of formula (I), (II)

Art Unit: 1752

and (III) may also have polymerization units of formula (IV)  $\alpha$ -methacryloyloxy- $\gamma$ -butyrolactone or formula (V) maleic anhydride (p. 0008-0011 and 0014-0024). One of ordinary skill in the art would readily envisage a tetrapolymer comprising recurring unit of formula (I), (II), (III) such as that exemplified in resin H and a recurring unit of formula (IV) or formula (V) as disclosed in paragraphs 0008-0011. Also, Fujishima, teaches all the limitations of the instant claims except the presence of a polymerized norbornene group, however does suggest in [0022] that a norbornene-type unit may be included.

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Amanda C. Walke whose telephone number is 571-272-1337. The examiner can normally be reached on M-R 5:30-4.

Art Unit: 1752

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cynthia Kelly can be reached on 571-272-1526. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
Amanda C Walke  
Primary Examiner  
Art Unit 1752

ACW  
September 5, 2006